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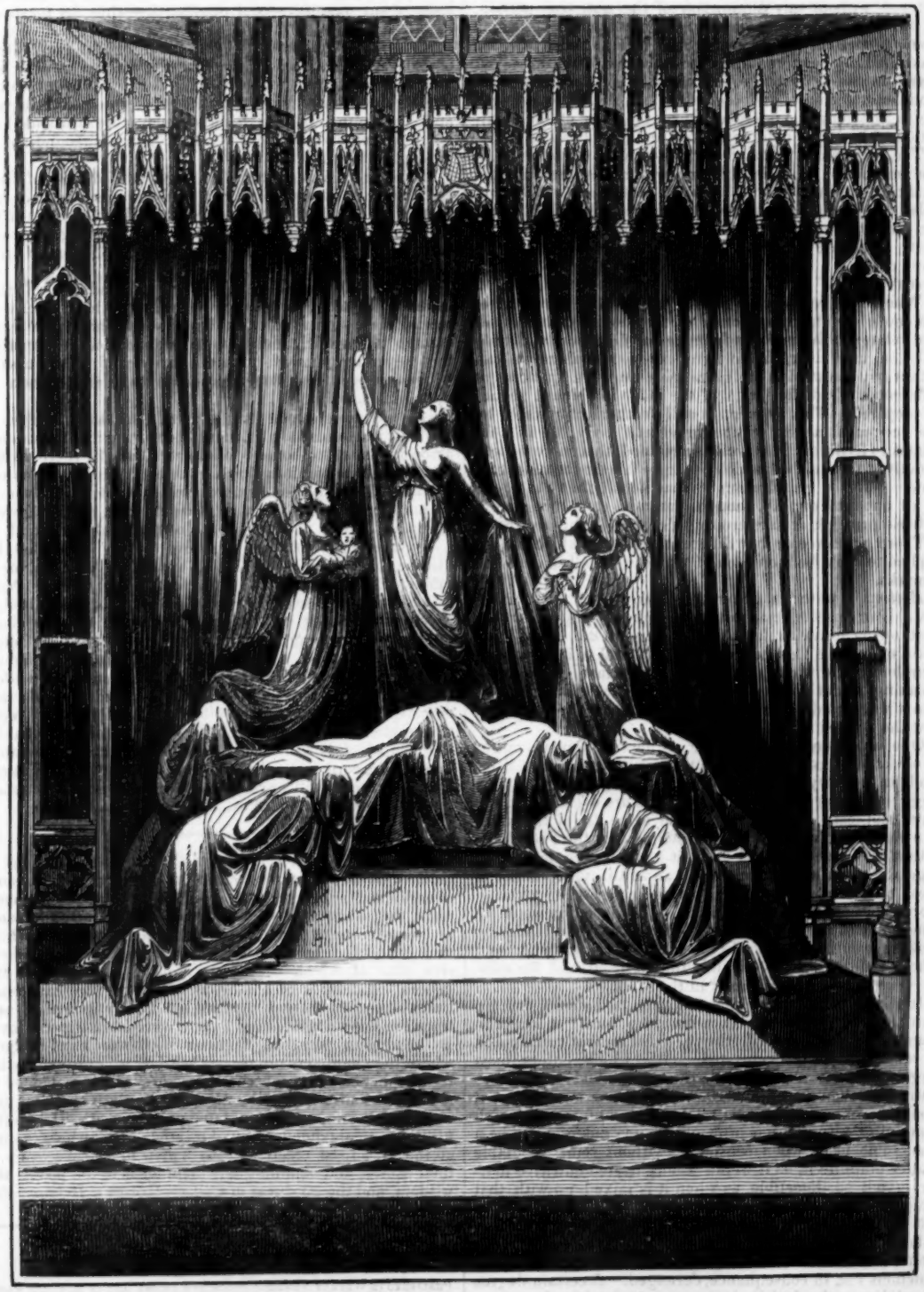
UNDER THE DIRECTION OF THE COMMITTEE OF GENERAL LITERATURE AND EDUCATION APPOINTED BY THE SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE.



MONUMENT OF THE PRINCESS CHARLOTTE, IN ST. GEORGE'S CHAPEL, WINDSOR.

THE PRINCESS CHARLOTTE OF WALES.

IN a short memoir, contained in a former volume of the *Saturday Magazine*, respecting an illustrious and hopeful person, whom the will of God consigned to an early grave, we referred to the page of history, to bear witness to "the emotions of sorrow and regret which are felt by a nation on the premature close of a life dear to thousands;" and it was added,—"It is not in a political view that a great national loss is thus felt: honour, love, and esteem for the *individual character* must be the spring of such affections." The secret of this genuine popularity is almost always to be found in an active concern for the welfare of others, particularly of those in a humbler sphere of life; a beneficence, founded upon a Christian principle, which never fails to impart its twofold blessing:—"It blesseth him that gives and him that takes." In this respect, the rich and powerful have a noble privilege attached to their station; for it is by acts of real kindness, rather than by any wonderful instances of display, that even the great ones of the earth may enjoy an honourable praise,

And read their history in a nation's eyes!

If we were asked to point to any particular passages of British history, for an illustration of these remarks, we would turn, first, to those which record the *illness*, *death*, and *character* of good King Edward the Sixth, whom, at the age of sixteen, a wise, though inscrutable Providence took to himself. When we reflect on his mildness of temper, his unaffected devotion and reverence for the Scriptures; when we are informed of his sending for Bishop Ridley, who had preached before his majesty, and, with tears in his eyes, conferring with him on the subject of a plan *for the relief of the poor* of London*; when, looking at the hospitals of Christ-Church, St. Thomas's, and St. Bartholomew's, we consider how much good he did in his short reign, we cannot wonder that young Edward was an object of tender affection to his people, or that his memory remains honoured among the generations that have followed him. The disastrous and unexpected death of Henry, son of King James the First †, the young prince to whom allusion has been made above, and whom it was his royal father's lot to follow to the grave, also plunged this country into sorrow as universal as it was sincere.

Equal, probably, if not greater, was the grief arising from that mournful dispensation, which fell upon the kingdom like a thunderbolt,—the decease of the Princess Charlotte in child-birth, on the 6th of November, 1817, in the twenty-second year of her age. Many of our readers may remember to have regarded this event as their own private calamity. It came home to our circles and our bosoms. Her pure taste for the quiet duties of domestic life; her devout and regular attendance on the ordinances of religion, both public and private; her diligent application to the studies proper to have qualified her for high and responsible duties, tempered with becoming dignity of demeanour to those about her; *her kind and attentive condescension to the poor*:—these things were sufficient to fix the love and respect of a nation, and to mark with shades of melancholy that critical period in the history of our country when we were suddenly called to bewail her loss.

The following sketch of the character of the Princess is met with in a sermon, preached at Cambridge on the day of her funeral, by Bishop Kaye, then Master of Christ's College, and Regius Professor of Divinity. "In estimating the characters of princes, we seldom make due allowance for the obstacles which the circumstances of their birth oppose to their moral improvement. Accustomed, from their earliest infancy, to command the ready obedience of all around them, and to obtain immediate compliance with their desires; besieged by flatterers, who persuade them that they are not bound by the same rules to which men in humble stations of life are subject; the great are too apt to contract a habit of neglecting the convenience and the feelings of others, and of referring all things to their own gratification. Even minds naturally disposed to benevolence are soon hardened into this callous insensibility, unless they are early impressed with religious principles and motives. *By these* our illustrious Princess escaped its fatal influence. Though raised so far above the common level of mankind, she thought none so low as not to be entitled to her regard. The power which her elevated rank conferred upon her, was in her eyes a trust, for the discharge of which she was accountable; and with this conviction deeply rooted in her heart, she omitted no opportunity of gaining those qualifications which might enable her worthily to act her part upon the busy theatre of public life. She felt the awful responsibility of the situation in which her birth had placed her, and strove, by acquiring the mastery over her own passions and desires, to fit herself for the arduous task of exercising dominion over others. No pursuit had any charms for her which had not some tendency to promote her intellectual or spiritual improvement. Innocent and instructive recreations,—the acquisition of knowledge,—the performance of acts of devotion to God, and of benevolence to mankind,—these were the employments which diversified her day,—employments always delightful to the pure of heart."

Attached to the east end of St. George's Chapel, Windsor, is an ancient Gothic building, erected by Henry the Seventh, as a burial place for himself and his successors, but superseded, for that purpose, by the beautiful chapel which he afterwards founded at Westminster Abbey, and which bears the name of that monarch. The building at Windsor to which we have alluded, was afterwards called "Wolsey's Tomb-house;" the cardinal having beautified it, with the view of its receiving his remains,—a design prevented by the concluding circumstances of his life. King George the Third, however, determined to construct a royal vault below the building, assigning it as a future resting-place for himself and the members of his family,—little supposing that his beloved granddaughter, so young and promising a branch of his house, would be laid within it before him.

It was to this mausoleum, on the evening well remembered by thousands, the 19th of November, 1817, that the mortal remains of this illustrious lady and her infant were conveyed. The following stanzas are part of a poem written at the time. In the latter is a very touching allusion to the good old king's utter unconsciousness of the event which caused such deep concern to his subjects.

And hark! around the mansions of the dead
Sinks the low dirge, or swells the anthem loud;
And hark! the words, the solemn words are said,
That bid the dust its kindred dust enshroud.
The tomb has closed—and, like a passing cloud,
A feverish dream, the pageant all has fled;
Back, in wild sorrow, wend the weeping crowd,
Back moves the mourning train, with measured tread;
Nor sigh, nor sound, disturbs the lovely Slumberer's bed.

That Slumberer weeps no more:—but Albion's pride
Is wept by all, save Albion's aged king:
For one lost maiden*, resting by her side,
His sorrow flowed, till Heaven had dried the spring.

* The Princess Amelia.

* See *Saturday Magazine*, Vol. I., p. 163.

† See *Saturday Magazine*, Vol. V., p. 93.

Windsor! at once within thy moated ring,
We wail the Stem revered, though bare and lone,
We wail the Bud despoiled by winter's wing:
These are the splendid miseries of a throne,
Away, away, frail man, go muse upon thine own.—(A.)

The white marble monument, an engraving of which appears in our present Number, was designed and executed by Mr. Wyatt*, and is one of the most interesting objects in St. George's Chapel. At the south-west corner of that beautiful fabric is a small oratory, called, from the founder, who was Dean of Windsor in the reign of King Henry the Seventh, Urswick's Chapel, within which it may be seen. The body of the departed Princess is represented, covered with drapery, resting on a bier at the moment the soul is supposed to have quitted its earthly tenement. The sorrowing forms at the corners are those of attendants. These, together with the designed image of the corpse, the right hand of which, falling over the side of the bier, is the only part unveiled, contrasts with the group above, namely the spirits of the mother and her infant, ascending, and attended by angels, and bring to mind the beautiful passage of the Preacher,—"Then shall the dust return to the earth as it was; and the spirit shall return unto God who gave it."—Eccles. xii. 7.

Without attempting to try this work by the rules of art, we may observe, that the effect, which is aided by a dim light cast upon it by means of coloured glass, is extremely striking. It is one of those compositions which command the silent and breathless attention of the beholder, particularly on a first visit: and amidst the crowd of reflections which occur to the mind on such an occasion, it is to be hoped this lesson may suggest itself to our young readers,—Like the departed whom it commemorates, to "remember their Creator in the days of their youth," and walk in His commandments, and take delight in His worship. It speaks to all, in the quaint but emphatic language of an old divine†, bidding us "go home, and think to die, and do that daily which we would wish to be found doing whenever death shall overtake us." M.

* On mentioning this Cenotaph in our account of St. George's Chapel, Vol. II., p. 235, we wrongly attributed the design and execution to Sir J. Wyatville; an error which, considering the various matter constantly pressing upon such a work as the *Saturday Magazine*, will readily have been forgiven.

† Jeremy Taylor.

The helpless infant, the fractious child, the impatient youth, the busy man, the more advanced period of life, and finally, the infirmities of age, pointing to the hour which is to close the scene which friends have enlivened and made dear, all present aspects of such painful variety and mortification, that the prudent man should occupy himself with more serious thoughts than what the business of this transitory state can supply.—W. K., *from the Arabic.*

Good manners is the art of making those people easy with whom we converse; whoever makes the fewest persons uneasy is the best bred man in company.—Swift.

I lay it down as a sound maxim, that every man is wretched in proportion to his vices; and affirm the noblest ornament of a young, generous mind, and the surest source of pleasure, profit, and reputation in life, to be an unreserved acceptance of virtue.

Complaisance pleases all, prejudices none, adorns wit, renders humour agreeable, augments friendship, redoubles love, and complying with justice and generosity, becomes the secret charm of the society of all mankind—Scudery.

If you do good with pain, says Chrysostom, the pain flies off, the good remains: if you do ill with pleasure, the pleasure flies, the ill remains.

THE COMET.

The sun has set 'neath the Western sea,
And, amidst the gathering clouds of even,
The dying rays of his majesty
Throw their latest gleam o'er the silent heaven;
And slowly the pale moon wanders by,
Clad in a thin white shroud of light,
And the stars that burn in the sapphired sky
Throng gladly round the Queen of night,
And silently hail her from afar,
As onward she urges her silver car.

And the vesper-bell, that tolls the hour,
Flings high its note 'mid the deepening gloom,
That scares the owl from its lonely bower,
And the drowsy bat from its ivied home,
And darker and deeper the shadows fall,
Outspreading their dim veil over all.

But see, what shoots through the dusky air,
Wafted along on the wings of night,
While the stars that spangle its pathway there
Are all outshone by its crimson light?
And slowly athwart the parched sky
It drives amidst the cloud-streams pale,
And its blood-red sheen all flaming high,
Marks the bright course of its lengthening trail.
The while, through the dreary blue it moves,
Where the night-wind alone in its stillness roves.

Say! dost thou come the messenger of woe,
The mighty bearer of some fearful grief,
To crush this world in one dire overthrow,
While not a hand on earth can bring relief;
But all must bow beneath thy wheiming power,
Kings, princes, peasants, in that awful hour?

Or say, as thou rollest in grandeur past,
Does the all-dreaded Azrael ride with thee?
Has "the angel of Death spread his wings on the blast,"
To call us to meet eternity?
Oh! who then has power to shield or save
From the hoarse voice that bids us to the grave?

Or bring'st thou glad tidings of Mercy's sway
That shall visit this lower shore,
And chase the grim heralds of dark dismay
To th' unfathomed grave for evermore?
Oh! then let us welcome thee gladly in song,
And Echo our accents of praise prolong!

Or dost thou come from wandering round that throne,
Begirt with jasper and with sardine stone,
Where only angels tread the hallowed ground
Amid those glorious realms of upper air,
Where only dove-like peace and joy are found;
And sorrow enters not, nor weary care,
But by the red waves of the sea of fire
Ten thousand thousand seraphs swell the song,
And infant cherubs join th' angelic choir,
And their glad notes of praise and love prolong;
And where, around th' Omnipotent "I AM,"
The joyous chorus of the white-robed train
Hymn forth their loud hosannas to the Lamb,
And sing for aye the same unwearied strain,
"Honour and glory to the Heav'n-born Three,
Who were, who are, who shall for ever be!"

R. C. P.

With whatever subject men are desirous of being acquainted, they must, of necessity, study the elements of it, and have recourse to those sources from whence information is to be drawn. Neglect of this, so obvious a course of proceeding, cannot but leave them in ignorance of the subject. The truth of this maxim is incontrovertible, and it is as applicable to religion as to all the other concerns of life. Neither religious knowledge, nor any other knowledge, comes by intuition; but it is the result of a careful application of the means which God has provided for our instruction. One of these means, with respect, that is, to religious knowledge, is the study of the Scriptures. Disregard of this salutary provision leaves some men in a state of infidelity, and others, who profess and call themselves Christians, in a state of most deplorable ignorance as to the foundation and the articles of their professed belief; whereas, would men but give that attention to the subject which its paramount importance demands, availing themselves withal of those assistances towards understanding the Scriptures with which the providence of God has furnished them, they could hardly be destitute of a Christian hope, or of the power of "giving an answer to every man that asketh them a reason of the hope that is in them."—Bishop Mant.

FAMILIAR ILLUSTRATIONS OF EXPERIMENTAL SCIENCE.

No. IX. HEAT, EBULLITION, VAPORISATION, STEAM-ENGINES.

THE vapour of boiling water is termed, in popular language, *steam*. In a perfect state, steam is elastic and invisible; the former property being common to all, and the latter to the greater part of, aëriform bodies. When steam becomes visible,—for instance, as it may often be seen issuing from the spout of a tea-kettle, or the safety-valve of a steam-boiler, it has suffered a partial condensation by contact with the atmosphere. We are accustomed to associate with our notions of steam a certain degree of opacity and of moisture. These are its characteristics only during its transition to a liquid state: at the ordinary temperature of boiling-water, steam is perfectly transparent and perfectly dry.

Water, whose surface is exposed to the influence of the atmosphere, having attained its boiling-point, cannot be made hotter, whatever may be the quantity or intensity of heat applied to the containing vessel. All the heat that enters the liquid, through the bottom and sides of the vessel, will be disengaged at the top, in combination with water in a vaporous form; neither the water, nor the vapour arising from it, exhibiting the slightest increase in their temperature.

When water and other liquids are heated in vessels from which the vapour is not permitted to escape, their temperatures may be raised very much higher than that of their ordinary boiling-points. We know of no limits to the capacity of liquids for heat, when thus confined, excepting in the strength and durability of the vessels we employ. Water has been raised to a temperature sufficiently high to melt tin (442°). In a vessel properly constructed, there would be no difficulty in making it red-hot.

As the elasticity, that is, the expansive force, of steam increases rapidly with every increase of temperature, it is important that vessels intended for heating water, under pressure, should be remarkably strong. Ignorance or forgetfulness of this property of steam has been the cause of many frightful accidents, from the bursting of boilers.

At the instant of its liberation from the surface of boiling-water, steam possesses the same temperature as the water itself. When water boils at 209°, the temperature of its steam will be also 209°: if it boil at 212°, the temperature of the steam will be the same; and so on for every degree of temperature.

Liquids, in assuming the vaporous form, require to be united with vast quantities of heat. The heat thus temporarily combined with any particular liquid, becomes, for the most part, latent,—that is, it eludes our observation. We may, by a particular process, ascertain that heat enters into a liquid, but we have no means of otherwise developing its existence, after the liquid has reached its boiling-point. For example: if we put a certain quantity of water, at the temperature 52°, into a vessel, whose temperature is the same, and apply to it a steady heat, say from the flame of a spirit-lamp, if, in five minutes, the water begins to boil, we may suppose that 160° of heat have entered into union with the water (52°+160°=212°), which is at the rate of 32° per minute. The heat being continued, we will suppose that, at the end of twenty-six minutes more, the whole of the water has been vaporised. Now, if the same quantity of heat per minute entered into the water after it began to boil as there did before, we shall have to account for (32°×26°) 832°. During the last twenty-six minutes, the temperature of the water, and of the steam arising from it, having never exceeded 212°, we perceive that these 832° of heat were necessary to convert the liquid into vapour; and as it cannot be detected by the thermometer, it is denominated *latent heat*. A more appropriate term, probably, is that of *insensible* heat. The latent, or insensible, heat thus combined with water may be again set free, or rendered sensible, by condensing the steam in a suitable vessel; affording a practical illustration of the durability of the most refined, as well as of the grosser, elements of nature.

Increase of bulk always accompanies the conversion of liquids into vapours. This augmentation of volume in the steam of boiling water is rather more than 1700 to 1; a cubic inch of water, at the temperature of 62°, when changed into steam at 212°, occupying a space equal to 1728 cubic inches.

The expansive force of steam is not increased by an increase of temperature, when separated from the water that produced it. In such a case, the elasticity of steam is no greater than that of atmospheric air. A vessel filled with steam only at 212°, might be heated to redness without any danger of its bursting.

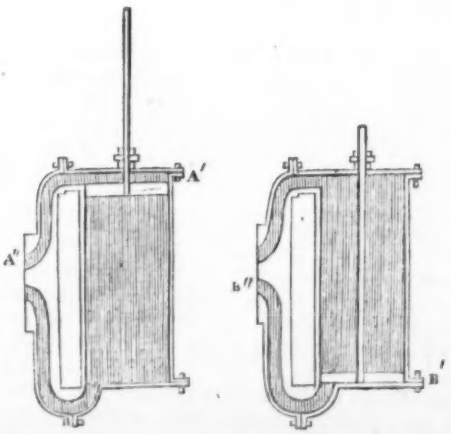
It is well known that steam at the ordinary temperature of boiling water (212°), will scald the hand, or other part of the body with which it may come in contact, as effectually as the water from which it is generated. It is not so with steam at a higher temperature than 212°. If water be heated in a vessel capable of resisting the pressure of steam at a temperature of 250° or 300°, when the steam is permitted to escape into the atmosphere, the hand may be brought in contact with it without sustaining any injury, or even inconvenience. We will endeavour to explain the cause of this. The expansive energy of steam at the ordinary boiling temperature of water, is equal to the pressure of the atmosphere; that is, the pressure of the air being 15 lbs. upon every square inch of the surface of bodies, when steam is generated at 212°, its elastic force, within the vessel, is just sufficient to counterbalance the air which presses on it from without. At 250° the elastic force of steam is twice that of air; at 275° it is three times; and at 293° four times; its pressure then being equal to about 60 lbs. upon every square inch of the containing vessel. Now, in proportion as the expansive force of the particles of steam is increased, so will their tendency to separate, when relieved from pressure, be increased. Whilst steam at 212° sustains, therefore, no other change on escaping into the atmosphere, than that to which it is liable from contact with a colder medium, high-pressure steam (say at 300°) expands, at the instant of its liberation, to more than four times its former bulk,—a process always accompanied by the loss of sensible heat—which loss is further accelerated by the admixture of the vapour with the surrounding air. At the distance of five or six inches from the orifice at which it issues, the temperature of high-pressure may be only 150° to 170°, whilst that of the common kind, under similar circumstances, will be 208° to 212°.

Another circumstance equally remarkable as that just described, demands a notice. When water is heated in a close vessel, we will suppose to 300°, on permitting the steam compressed on the surface of the water to escape, the temperature of the water, and of the remaining steam within the vessel, will be *instantly* reduced to 212°. We believe there is no difficulty in explaining this phenomenon. That water is susceptible of compression, although it is so in a degree very inferior to the vapour arising from it, cannot be denied. Its sudden loss of sensible heat,

when high-pressure steam is permitted to escape from its surface, is, therefore, the result of an equally sudden enlargement of volume. We have here an instance of the transition of heat from a *sensible* to a *latent* state; the extra 88° (300°−212°) being still combined with the water, and the steam in the vessel; but so changed in its character, as to be no longer appreciable by the thermometer.

To the elastic force of steam, and the facility with which its elasticity is destroyed, by a slight change of temperature, we are indebted for its application as a moving power in the STEAM-ENGINE,—one of the most valuable gifts ever presented by philosophy to the human race. The invention and improvement of this mighty product of human genius, is peculiarly associated with our own age and country. Seventy years have scarcely passed away since Mr. WATT commenced those experiments on steam, which, step by step, have led to results so stupendous, that they are without parallel in the history of the world. It is impossible to contemplate, in all their vastness, the blessings already conferred by the steam-engine upon mankind. Boundless in their extent, and universal in their application, we may yet conclude that they are only preparing the way for more illustrious benefits. What has been done may well excite our admiration, as it ought to awaken our gratitude, to the AUTHOR of all our mercies. Much, however, remains to be accomplished. The discoveries and improvements which are daily unfolding themselves to our view, may attest that human knowledge is at present limited and imperfect; but they are equally calculated to inspire in us new hopes, and enlarged expectations, as respects the future.

The most simple form of the steam-engine is that denominated the *high-pressure* engine, which occupies but very little space; and may, therefore, be employed in situations where one of a different kind would be unsuitable. In this engine, steam is generally used at a density equal to three or four atmospheres; that is, its expansive force within the boiler is about 50 or 60 lbs. upon every square inch of the metal. Supposing it to be 60 lbs., there are 15 lbs. to be deducted for the ordinary pressure of the air, on the outside of the boiler, so that the real force of the steam, in this case, will be 45 lbs. to the inch. Motion is obtained by permitting steam to pass from the boiler, first to one end, and then to the other, of a metallic, cylindrical vessel; to which is fitted, steam-tight, a piston, made of similar materials. The following figures are intended to represent a section of the cylinder, with the piston at its opposite extremities.



If we suppose the piston to be at A′, and steam be admitted through the pipe A″, to its upper side, the piston will be forced downwards to B′. On allowing the steam above the piston to escape from the cylinder, at the same time admitting a fresh supply from the boiler, through the pipe B″, to the under side of the piston, it will be returned to its former situation at A′. These alternate motions may be continued as long as the necessary quantity of steam is generated within the boiler.

From the danger attending the employment of high-pressure steam, it is never applied, in this country, to the purposes of navigation. It is admirably adapted for small engines, where great power is required in a limited space; and especially for loco-motive carriages. Notwithstanding the many curious contrivances that have lately been adopted, with a view to security, the risk of using large quantities of water, at a temperature of 250°, or 300°, is still too great to warrant its general introduction.

The low-pressure, or *condensing engine*, is more complex in its arrangements, and, of course, more costly in its construction, than that already described. In this engine, steam is usually employed whose expansive force is from twenty to twenty-five pounds on the inch; which is only five to ten pounds beyond what is necessary to counteract the pressure of the air on the exterior of the boiler, and from which no serious consequences would result, were the boiler to burst. The elasticity of the steam is not the only source of motion in the condensing engine, for, whilst steam is exerting its force on one side of the piston, a vacuum is produced on the opposite side by the sudden condensation of the steam previously introduced there. In this respect, it differs essentially from the high-pressure engine, whose piston is always opposed by a force equivalent to that of the atmosphere, namely, fifteen pounds to the inch. In the cylinder of the condensing engine, the whole force of the steam, whatever it may be, is brought into effective operation. In that of the high-pressure engine, one atmosphere of steam is entirely wasted.

The condensation of the steam, which formerly took place in the working cylinder, by forcing into it a jet of cold water, is now effected in a separate vessel, so that the temperature of the cylinder is constantly maintained. For this, as well as many other equally important improvements, we are indebted to Mr. Watt.

The *safety-valve* of a steam-engine consists of a metallic stopper, nicely adapted to a circular orifice, yet moving freely in it, at the top of the boiler. This stopper, or valve, is kept in its place by a lever, moving by a joint at one end, whilst a weight is suspended at the other. By adjusting the weight on the longer arm of the lever, the valve is made to press upon the orifice in the boiler with any required degree of force. When the elasticity of the steam within the boiler increases beyond what is necessary for working the engine, or for the security of the boiler, the valve is forced open, and some of the steam escapes. This is frequently seen to be the case on board steam-packets just before they start, or when the engine is stopped for a few minutes after they have commenced their voyage.

We must now conclude this part of our subject. On a future occasion, we hope to present our readers with a more detailed account of the steam-engine; in which its various parts will be explained by direct reference to suitable illustrations. R. R.

FLY him, who, from mere curiosity, asks three questions running, about a thing which cannot interest him.—LAVATER.

THE HUMAN HAND.

IN that portion of the works of Galen which bears this title, "On the use of the various parts of the Body;" after having defined what is to be understood by the term *part* or *member*, as applied to an animal body, he proceeds in the following manner:—

But all these parts of the body were made for the use of the soul,—that sentient and intelligent principle which animates the body, and of which the body is merely the organ; and on this account, the component parts of animals differ according to the nature of this principle: for some animals are bold and fierce; others are timid and gentle; some are gregarious, and co-operate for their mutual sustenance and defence; others are solitary, and avoid the society of their fellows; but all have a form or body accommodated to their natural dispositions and habits. Thus, the lion has powerful fangs and claws; the hare has swiftness of foot, but in other points is defenceless. But to man, the only animal that partakes of Divine intelligence, the Creator has given, in lieu of every other nocturnal weapon, or organ of defence, that instrument, *the hand;* an instrument applicable to every act and occasion, as well of peace as of war. Man, therefore, wants not a hoof, or horn, or any other natural weapon; inasmuch as he is able with his hand to grasp a much more effective weapon,—the sword, or spear. Besides which, natural weapons can be employed only in close conflict; while some of the weapons employed by man, as javelins or arrows, are even more effectual at a distance. And, again, though man may be inferior to the lion in swiftness, yet by his dexterity and skill, he breaks into his use a still swifter animal,—the horse; mounted on whose back, he can escape from, or pursue the lion, or attack him at every advantage. He is enabled, moreover, by means of this instrument, to clothe himself with armour of various kinds, or to intrench himself within camps or fenced cities. Whereas, were his hands encumbered with any natural armour, he would be unable to employ them for the fabrication of those instruments and means which give him such a decided advantage over all the other animals of creation.

Nor have we yet enumerated the most important of those privileges which the hand imparts to man. With this he weaves the garment that protects him from the Summer's heat or Winter's cold; with this he forms the various furniture of nets and snares, which give him a dominion over the inhabitants as well of the water as of the air and earth; with his hand he constructs the lyre and lute, and the numerous instruments employed in the several arts of life; with his hand he erects altars and shrines to immortal gods; and lastly, by means of the same instrument, he bequeaths to posterity, in writings, the intellectual treasures of his own divine imagination.

Let us then scrutinize this member of our body, and inquire not simply whether it be in itself useful for all the purposes of life, and adapted to an animal endued with the highest intelligence, but whether its entire structure be not such, that it could not be improved by any conceivable alteration.

In the first place, it possesses, in an eminent degree, a leading quality of an organ of grasp, since it readily applies itself to, and securely holds, bodies of every form and size, that are capable of being moved by human strength. Nor need we inquire whether it be better for this purpose that it should be divided into several parts, or that it should be altogether undivided; for is it not apparent, without further reasoning, that, had it been undivided, it could have grasped only just such a portion of every object presented to it as was equal to itself? but that, being divided into many parts, it can both easily grasp bodies much larger than itself, and can accurately search out, and lay hold of, the smallest particles of matter; for to the former, it is capable of applying itself so as to encompass them by the separation of the fingers, while, in laying hold of very minute objects, the entire hand is not employed, but only the tips of two of the fingers, because from the grasp of the whole hand minute objects would easily escape.

Thus then the hand is framed in the manner the most convenient for laying a firm hold on objects both greater and less than itself. And in order to enable it to apply itself to objects of various shapes, it is evidently most convenient that it should be divided into many parts, as it is, and seems to be better constituted for this purpose than any similar instrument; for it not only can apply itself to substances of a spherical form, so as to touch them with every part of itself, but it also can securely hold substances of a plane or of a concave surface; and, consequently, it can hold substances of any form.

And, because many bodies are of too great a size to be held by one hand alone, Nature has, therefore, made each hand an assistant to its fellow; so that the two, when together laying hold of bodies of unusual bulk, on opposite sides, are fully equivalent to a single hand of the very largest dimensions; and, on this account, the hands are inclined towards, and in every point are made equal to, each other, which is at least desirable, if not necessary, in instruments intended to have a combined action.

Take then any one of those unwieldy bodies which a man can only lay hold of by means of both his hands, as a mill-stone or a rafter; or take one of the smallest objects, as a millet-seed or a hair, or a minute thorn; or, lastly, reflect on that vast multitude of objects of every possible size, intermediate, to the greatest and the least of those above-mentioned, and you will find the hands so exactly capable of grasping each particular one, as if they had been expressly made for grasping that alone. Thus the smallest things of all we take up with the tips of the fingers; those which are a little larger, we take up with the same fingers, but not with the tips of them; substances still larger, we take up with three fingers, and so on with four, or with all the five fingers, or even with the whole hand; all which we could not do, were not the hand divided, and divided precisely as it is. For, suppose the thumb were not placed as it is, in opposition to the other four fingers, but that all the five were ranged in the same line,—is it not evident that in this case their number would be useless? For, in order to have a firm hold of any thing, it is necessary either to grasp it all round, or at least to grasp it in two opposite points; neither of which would have been possible, if all the five fingers had been placed in the same plane: but the end is now fully attainable, simply in consequence of the position of the thumb, which is so placed, and has exactly such a degree of motion, as, by a slight inclination, to be easily made to co-operate with any one of the four fingers. But it is not merely necessary in laying hold of minute objects to employ the extremities of the fingers opposed to each other, but that those extremities should be exactly of the character they are, namely soft and round, and furnished with nails; for, if the tips of the fingers were of bone, and not of flesh, we could not then lay hold of such minute bodies as thorns or hairs; or, if they were a softer and moister substance than flesh, neither then could such small bodies have been secured. For, in order that a body may be firmly held, it is necessary that it be in some degree infolded in the substance holding it; which condition could not have been fulfilled by a hard or bony material; and on the other hand, a material too soft would easily yield to substances of which it attempted to lay hold, and would continually let them escape: whereas the extremities of the fingers are just of that intermediate degree of consistence which is calculated for their intended use.

But, since tangible substances vary much in their

degree of hardness, nature has adapted the structure of the extremities of the fingers to that circumstance: for they are not formed either entirely of flesh, or of the substance called nail, but of a most convenient combination of the two; thus, those parts which are capable of being mutually brought in opposition, and which are employed in feeling for minute objects, are fleshy; while the nails are placed externally, as a support to the former. For the fingers are capable of holding soft substances, simply by the fleshy or soft part of their extremity; but they could not hold hard substances without the assistance of nails; deprived of the support of which the flesh would be forced out of its position. And, on the other hand, we could not lay hold of hard substances by means of the nails alone; for these being themselves hard, would easily slip from the contact of hard bodies.

Thus, then, the soft flesh at the tips of the fingers compensating for the unyielding nature of the nails, and the nails giving support to the yielding softness of the flesh, the fingers are hereby rendered capable of holding substances that are both small and hard. And this will be more evident, if you consider the effect of an unusual length of the nails; for where the nails are immoderately long, and consequently come in contact with each other, they cannot lay hold of any minute object, as a small thorn or hair: while, on the other hand, if, from being unusually short, they do not reach to the extremities of the fingers, minute bodies are incapable of being held, through defect of the requisite support: but if they reach exactly to the extremities of the fingers, they then, and then only, fulfil the intention for which they were made. The nails, however, are applicable to many other purposes besides those which have been mentioned, as in polishing and in scraping, and in tearing and peeling off the skin of vegetables or animals: and in short, in almost every act where nicety of execution is required, the nails are called into action.

Whoever admires not the skill and contrivance of nature, must either be deficient in intellect, or must have some private motive, which withholds him from expressing his admiration. He must be deficient in intellect, if he do not perceive that the human hand possesses all those qualifications which it is desirable it should possess, or if he think that it might have had a form and construction preferable to that which it has; or he must be prejudiced, by having imbibed some wretched opinions, consistently with which he could not allow that contrivance is observable in the works of nature.

[Kidd's *Bridgewater Treatise.*]

LOVE FOR THE DEAD.

The grave is the ordeal of true affection. It is there that the divine passion of the soul manifests its superiority to the instinctive impulse of mere animal attachment. The latter must be continually refreshed and kept alive by the presence of its object; but the love that is seated in the soul can live on long remembrance. The mere inclinations of sense languish and decline with the charms which excited them, and turn with disgust from the dismal precincts of the tomb; but it is thence that truly spiritual affection rises purified from every sensual desire, and returns, like a holy flame, to illumine and sanctify the heart of the survivor.

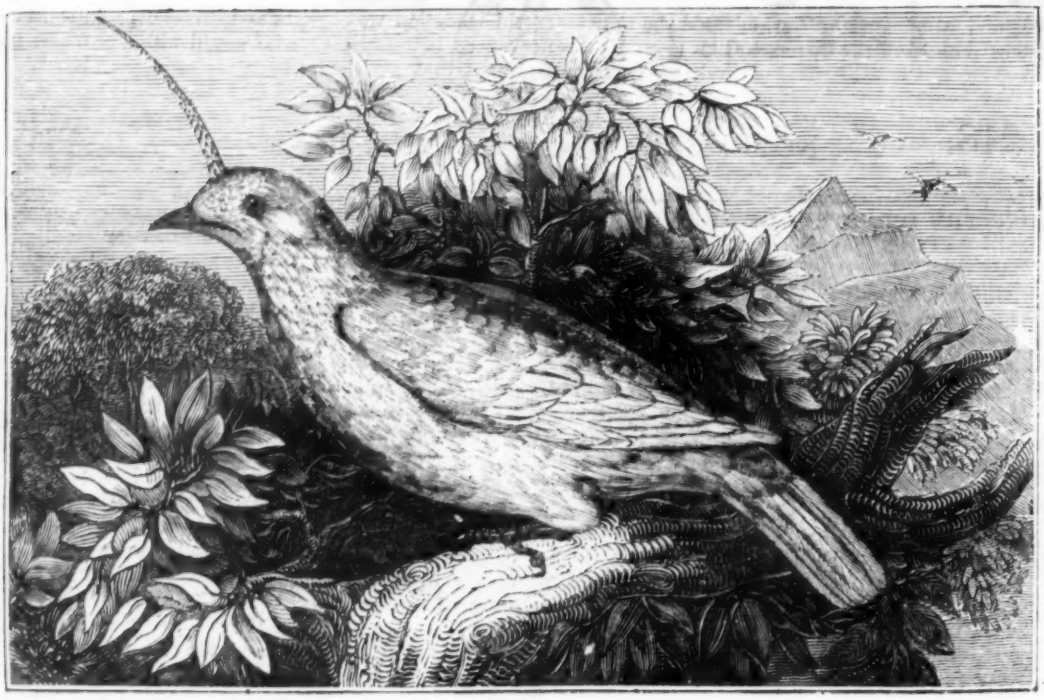
The sorrow for the dead is the only sorrow from which we refuse to be divorced. Every other wound we seek to heal; every other affliction to forget; but this wound we consider it as a duty to keep open,—this affliction we cherish, and brood over in solitude. Where is the mother who would willingly forget the infant that perished, like a blossom, from her arms, though every recollection is a pang? Where is the child that would forget the most tender of parents, though to remember be but to lament? Who, even in the hour of agony, would forget the friend over whom he mourns? Who, even when the tomb is closing upon the remains of her he most loved,—when he feels his heart, as it were, crushed in the closing of its portals,—would accept of the consolation that must be brought by forgetfulness? No; the love which survives the tomb, is one of the noblest attributes of the soul. If it has its woes, it has likewise its delights; and, when the overwhelming burst of grief is calmed into the gentle tear of recollection,—when the sudden anguish, and the convulsive agony over the present ruins of all that we most loved, are softened away into pensive meditation on all that it was in the days of its loveliness, who would root out such a sorrow from the heart? Though it may sometimes throw a passing cloud over the brightest hours of gaiety, or spread a deeper sadness over the hour of gloom, yet who would exchange it, even for the song of pleasure, or the burst of revelry? No; there is a voice from the tomb sweeter than song. There is a remembrance of the dead to which we turn, even from the charms of the living. Oh, the grave! the grave! it buries every error; covers every defect; extinguishes every resentment! From its peaceful bosom spring none but fond regrets, and tender recollections. Who can look down upon the grave, even of an enemy, and not feel a compunctious throb, that he should ever have warred with the poor handful of earth that lies mouldering before him?

Ay! go to the grave of buried love, and there meditate; there settle the account with thy conscience, for every past endearment unregarded, of that departed being, who can never, never, never return, to be soothed by thy contrition! If thou art a child, and hast ever added a sorrow to the soul, or a furrow to the silvered brow of an affectionate parent; if thou art a husband, and hast ever caused the fond bosom that ventured its happiness in thy arms, to doubt one moment of thy kindness, or thy truth; if thou art a friend, and hast ever wronged in thought, word, or deed, the spirit that generously confided in thee; if thou art a lover, and hast ever given one unmerited pang to that true heart which now lies cold and still beneath thy feet; then be sure that every unkind look, every ungracious word, every ungentle action, will come thronging back upon thy memory, and knocking dolefully at thy soul; then be sure that thou wilt lie down sorrowing and repentant on the grave, and utter the unheard groan, and pour the unavailing tear,—more deep, more bitter, because unheard, and unavailing.

Then weave thy chaplet of flowers, and strew the beauties of nature about the grave; console thy broken spirit, if thou canst, with these tender, yet futile tributes of regret; but take warning by the bitterness of this thy contrite affliction over the dead, and henceforth be more faithful and affectionate in the discharge of thy duties to the living.—Washington Irving.

Prudence governs the wise; but they are few, and the most wise are not so at all times: passion actuates every body, and almost always.—St. Evremond.

A man may be concise and utter much at the same time, especially in writing: for, in conversation, a great talker, and a sayer of nothing, do generally signify but one and the same thing.—Coste.



THE BELL BIRD.

THE BELL-BIRD. (*Cotinga carunculata.*)

The Bell-bird is a native of South America, and acquires its name from a singular property it possesses, which we shall presently describe.

This bird is about a foot in length; its beak is powerful and of a considerable size, and of a black colour, the same as the feet, which are short and moderately powerful. The plumage of the male, in its perfect state, as represented in the plate, is of a dazzling whiteness, over its whole body. But the most remarkable peculiarity of this bird is a rounded, muscular caruncle, covered with short feathers, and about two inches in length, which is fixed in its forehead, and, in general, hangs down negligently on one side, unless the bird is agitated by some passion, when it becomes inflated, and is raised upon its forehead, as seen in the engraving. The extraordinary sound produced by the Bell-bird, is supposed by most naturalists to be produced by the air being forced violently through its singular crest: some French naturalists, however, say that this is impossible, as there is no connexion between the palate and the crest, which is merely a muscular appendage; but the general belief is agreeable to the following account of its habits by Waterton.

"The Campanero of the Spaniards, called Dara by the Indians, and Bell-bird by the English, is about the size of a Jay. His plumage is white as snow. On its forehead rises a spiral tube, nearly three inches long. It is jet-black, dotted all over with small white feathers. It has a communication with the palate, and when filled with air, looks like a spire; when empty it becomes pendulous. His note is loud and clear, like the sound of a bell, and may be heard at the distance of three miles. In the midst of these extensive wilds,—generally on the dried top of an aged mora, almost out of gun-reach, you will see the Campanero. No sound or song from any of the winged inhabitants of the forest—not even the clearly-pronounced "Whip poor will!" from the Goat-sucker, cause such astonishment as the toll of the Campanero.

"With many of the feathered race, he pays the common tribute of a morning and evening song, and even when the meridian sun has shut in silence the mouths of nearly the whole of animated nature, the Campanero still cheers the forest. You hear his *toll;* and then a pause for a minute, then another *toll,* and then a pause again, and then a *toll,* and then again a pause. Then he is silent for six or eight minutes, and then a pause, and so on.

"Acteon would stop in full chase—Maria would defer her evening song—and Orpheus himself would drop his lute, to listen to him—so sweet, so novel, and romantic, is the toll of the pretty snow-white Campanero. He is never seen to feed with the other Cotingas, and it is unknown in what part of Guiana he makes his nest."

Endeavour to be as perfect as you can in the particular calling you adopt: possess all the arts and mysteries thereunto belonging, and be assiduous in every part thereof; industry being the natural means of acquiring wealth, honour, and reputation, as idleness is of poverty, shame, and disgrace.—*Economical Library.*

Not only has Solomon, in his wisdom, pointed out the evils which attend those who tarry long at the wine, but all the precepts and denunciations against drunkenness, all the details of the flagitious acts perpetrated under its influence, which are recorded in the Bible, from Genesis to Revelation, are directed against the inordinate drinkers of wine. It is needless to say more respecting them, but refer them to that sacred volume, with the hope that it may guide them to salutary contrition and penitential sorrow. —Hodgkin.

Great talents for conversation require to be accompanied with great politeness: he who eclipses others, owes them great civilities, and whatever a mistaken vanity may tell us, it is better to please in conversation than to shine in it. —Johnson.

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